CLAIMS

1. A DNA sequence encoding at least one isoform of a G1 protein, or fragments and analogs thereof, said at least one G1 isoform, or fragments and analogs thereof capable of binding to or interacting directly or indirectly with MORT-1 and/or any of the MORT-1-binding proteins, or other intracellular mediator/modulator proteins and being capable of mediating the intracellular effect mediated by the FAS-R or p55-TNF-R, or other cytotoxic mediators or inducers.

2. A DNA sequence according to claim 1 selected from the group consisting of :

(a) a cDNA sequence derived from the coding region of a native isoform of G1 protein;

(b) DNA sequences capable of hybridization to a sequence of (a) under moderately stringent conditions and which encode a biologically active isoform of G1 protein; and

(c) DNA sequences which are degenerate as a result of the genetic code to the DNA sequences defined in (a) and (b) and which encode a biologically active isoform of G1 protein.

3. A DNA sequence according to claim 1 ~~or claim 2~~ comprising at least part of the sequence depicted in Fig. 1 and encoding at least one isoform of the G1 protein, the G1α isoform.

4. A DNA sequence according to claim 1 ~~or claim 2~~ comprising at least part of the sequence depicted in Fig. 2 and encoding at least one isoform of the G1 protein, the G1β isoform.

5. A DNA sequence according to claim 3 encoding a G1 isoform having the amino acid sequence depicted in Fig. 1, fragments and analogs thereof.

6. A DNA sequence according to claim 4 encoding a G1 isoform having the amino acid sequence depicted in Fig. 2, fragments and analogs thereof.

7. A vector comprising a DNA sequence according to ~~any one of claims 1-6~~ Claim 1.

8. A vector according to claim 7 capable of being expressed in a eukaryotic host cell.

9. A vector according to claim 7 capable of being expressed in a prokaryotic host cell.

10. Transformed eukaryotic or prokaryotic host cells containing a vector according to ~~any one of claims 7-9~~ Claim 7.

11. An isoform of a G1 protein, fragments, or functional analogs or derivatives thereof encoded by a DNA sequence according to ~~any one of claims 1-6~~ Claim 1, said protein, fragments, analogs and derivatives thereof being capable of binding to or interacting directly or indirectly with MORT-1 and/or any of the MORT-1-binding proteins or other intracellular mediator/modulator proteins and mediating the intracellular effect mediated by the FAS-R or p55-TNF-R, or other cytotoxic mediators or inducers.

12. A G1 isoform, fragments, analogs and derivatives thereof according to claim 11, wherein said protein, analogs, fragments and derivatives have at least part of the amino acid sequence depicted in Fig. 1.

13. A G1 isoform, fragments, analogs and derivatives thereof according to claim 11, wherein said protein, analogs, fragments and derivatives have at least part of the amino acid sequence depicted in Fig. 2.

14. A method for producing the at least one isoform of the G1 protein, fragments, analogs or derivatives thereof according to any one of claims 11-13, comprising growing the transformed host cells according to claim 10 under conditions suitable for the expression of said protein, analogs or derivatives, effecting post-translational modifications as necessary for obtaining of said protein, fragments, analogs or derivatives and isolating said expressed protein, fragments, analogs or derivatives.

15. Antibodies or active fragments or derivatives thereof, specific for the G1 protein, fragments, analogs or derivatives according to ~~any one of claims 11-13~~ claim 11.

16. A method for the modulation of cell death or inflammatory processes, comprising treating said cells with one or more G1 proteins, analogs, fragments or derivatives according to ~~any one of claims 11-13~~ claim 11, wherein said treating of said cells comprises introducing into said cells said one or more proteins, analogs, fragments or derivatives in a form suitable for intracellular introduction thereof, or introducing into said cells a nucleotide sequence encoding said one or more proteins, analogs, fragments, or derivatives in the form of a suitable vector carrying said sequence, said vector capable of effecting the insertion of said sequence into said cells in a way that said sequence is expressed in said cells.

17. A method for the modulation of the FAS-R ligand or TNF effect on cells carrying a FAS-R or p55-R, comprising treating said cells with one or more G1 proteins, analogs, fragments or derivatives according to ~~any one of claims 11-13~~ claim 11, capable of binding directly or indirectly to MORT-1, and/or to any of the MORT-1-binding proteins, which MORT-1 binds to the intracellular domain of FAS-R, or capable of binding directly to indirectly to MORT-1 which binds to TRADD which binds to the intracellular domain of p55-R and thereby being capable of modulating/mediating the activity of said FAS-R or p55 TNF-R, wherein said treating of said cells comprises introducing into said cells said one or more proteins, analogs, fragments or derivatives in a form suitable for intracellular introduction thereof, or introducing into said cells a DNA sequence encoding said one or more proteins, analogs, fragments or derivatives in the form of a suitable vector carrying said sequence, said vector being capable of effecting the insertion of said sequence into said cells in a way that said sequence is expressed in said cells.

18. A method for the modulation of the FAS-R ligand or TNF effect on cells according to claim 17, wherein said treating of cells comprises introducing into said cells said G1 protein, analogs, fragments or derivatives, a DNA sequence encoding said G1 protein,

analogs, fragments or derivatives in the form of a suitable vector carrying said sequence, said vector being capable of effecting the insertion of said sequence into said cells in a way that said sequence is expressed in said cells.

19. A method according to claim 17 ~~or 18~~ wherein said treating of said cells is by transfection of said cells with a recombinant animal virus vector comprising the steps of :

(a) constructing a recombinant animal virus vector carrying a sequence encoding a viral surface protein (ligand) that is capable of binding to a specific cell surface receptor on the surface of a FAS-R- or p55-R-carrying cell and a second sequence encoding a protein selected from the G1 protein, analogs, fragments and derivatives according to any one of claims 11-13, that when expressed in said cells is capable of modulating/mediating the activity of said FAS-R or p55-R; and

(b) infecting said cells with said vector of (a).

20. A method for the modulation of cell death or inflammatory processes, comprising treating said cells with one or more inhibitors of one or more proteins/enzymes mediating said cell death or inflammatory processes, said inhibitors being selected from the group consisting of : (i) one or more G1 proteins, analogs, fragments or derivatives according to ~~any one of claims 11-13~~ claim 11 capable of inhibiting said cell death or inflammatory processes; and (ii) inhibitors of one or more G1 proteins of ~~any of claims 11-13~~ claim 11 when said one or more G1 proteins augments/enhances or mediates said cell death or inflammatory processes.

21. A method for modulating the FAS-R ligand or TNF effect on cells carrying a FAS-R or a p55-R comprising treating said cells with antibodies or active fragments or derivatives thereof, according to claim 15, said treating being by application of a suitable composition containing said antibodies, active fragments or derivatives thereof to said cells, wherein when the G1 protein or portions thereof of said cells are exposed on the extracellular surface, said composition is formulated for extracellular application, and when said G1 proteins are intracellular said composition is formulated for intracellular application.

22. A method for modulating the FAS-R ligand or TNF effect on cells carrying a FAS-R or p55-R comprising treating said cells with an oligonucleotide sequence encoding an antisense sequence for at least part of the DNA sequence encoding a G1 protein according to ~~any one of claims 1-6~~ Claim 1, said oligonucleotide sequence being capable of blocking the expression of the G1 protein.

23. A method according to claim 22 wherein said oligonucleotide sequence is introduced to said cells via a virus of claim 19 wherein said second sequence of said virus encodes said oligonucleotide sequence.

24. A method for treating tumor cells or HIV-infected cells or other diseased cells, comprising:

(a) constructing a recombinant animal virus vector carrying a sequence encoding a viral surface protein capable of binding to a specific tumor cell surface receptor or HIV-infected cell surface receptor or receptor carried by other diseased cells and a sequence encoding a protein selected from the G1 protein, analogs, fragments and derivatives of ~~any one of claims 11-13~~ Claim 11, that when expressed in said tumor, HIV-infected, or other diseased cell is capable of killing said cell; and

(b) infecting said tumor or HIV-infected cells or other diseased cells with said vector of (a).

25. A method for modulating the FAS-R ligand or TNF effect on cells comprising applying the ribozyme procedure in which a vector encoding a ribozyme sequence capable of interacting with a cellular mRNA sequence encoding a G1 protein according to ~~any one of claims 11-13~~ Claim 11, is introduced into said cells in a form that permits expression of said ribozyme sequence in said cells, and wherein when said ribozyme sequence is expressed in said cells it interacts with said cellular mRNA sequence and cleaves said mRNA sequence resulting in the inhibition of expression of said G1 protein in said cells.

26. A method selected from the method according to ~~any one of claims 16-25~~ claim 16, wherein said G1 protein, analogs, fragments and derivatives of any thereof, are capable of binding directly or indirectly to MORT-1 and/or to any MORT-1-binding protein, which MORT-1, in turn, binds specifically to FAS-IC, or which are capable of binding directly or indirectly to MORT-1 and/or any of the MORT-1-binding proteins, which, MORT-1, in turn, binds to TRADD, which, in turn, binds to the p55-IC.

27. A method for isolating and identifying proteins, according to ~~any one of claims 11-13~~ claim 11, capable of binding directly or indirectly to the MORT-1 protein, and/or any of the MORT-1-binding proteins, comprising applying the yeast two-hybrid procedure in which a sequence encoding said MORT-1 protein and/or MORT-1-binding protein is carried by one hybrid vector and sequence from a cDNA or genomic DNA library is carried by the second hybrid vector, the vectors then being used to transform yeast host cells and the positive transformed cells being isolated, followed by extraction of the said second hybrid vector to obtain a sequence encoding a protein which binds to said MORT-1 protein, and/or MORT-1-binding proteins.

28. A method according to ~~any one of claims 16-27~~ claim 16 wherein said protein is at least one of the G1 isoforms, analogs, fragments and derivatives thereof.

29. A pharmaceutical composition for the modulation of the FAS-R ligand- or TNF- or other protein- effect on cells comprising, as active ingredient at least one isoform of a G1 protein according to ~~any one of claims 11-13~~ claim 11, its biologically active fragments, analogs, derivatives or mixtures thereof.

30. A pharmaceutical composition for modulating the FAS-R ligand- or TNF- or other protein- effect on cells comprising, as active ingredient, a recombinant animal virus vector encoding a protein capable of binding a cell surface receptor and encoding at least one isoform of a G1 protein or its biologically active fragments or analogs, according to ~~any one of claims 11-13~~ claim 11.

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31. A pharmaceutical composition for modulating the FAS-R ligand or TNF or other protein effect on cells comprising as active ingredient, an oligonucleotide sequence encoding an anti-sense sequence of the G1 protein mRNA sequence according to ~~any one of claims 1-6.~~ claim 1

32. A method for the modulation of the MORT-1-induced effect or MORT-1-binding protein-or other protein-induced effect on cells comprising treating said cells in accordance with a method of ~~any one of claims 16-28,~~ claim 16 with G1 proteins, analogs, fragments or derivatives thereof or with sequences encoding G1 proteins, analogs or fragments thereof, said treatment resulting in the enhancement or inhibition of said MORT-1- or MORT-1-binding protein- or other protein- mediated effect and thereby also of the FAS-R or p55-R or other cytotoxic mediator or inducer mediated effect.

33. A method according to claim 32 wherein said G1 protein, analog, fragment or derivative thereof is that part of the G1 protein which is specifically involved in binding to MORT-1 or MORT-1-binding protein or other protein.

34. A method according to claim 32 ~~or 33~~ wherein said G1 protein is any one of the G1 isoforms capable of enhancing the MORT-1- or MORT-1-binding protein- or other protein- associated effect on cells and thereby also of the FAS-R or p55-R or other cytotoxic mediator or inducer associated effect on the cells.

35. A method of modulating apoptopic processes or programmed cell death processes comprising treating said cells with one or more G1 proteins, analogs, fragments or derivatives according to ~~any one of claims 11-13,~~ claim 11 capable of binding directly or indirectly to MORT-1, and/or any of the MORT-1-binding proteins, which MORT-1 binds to the intracellular domain of FAS-R, or capable of binding directly or indirectly to MORT-1 and/or any of the MORT-1-binding proteins, which MORT-1 binds to TRADD which binds to the intracellular domain of p55-R and thereby being capable of modulating/mediating the activity of said FAS-R or p55 TNF-R, wherein said treating of

said cells comprises introducing into said cells said one or more proteins, analogs, fragments or derivatives in a form suitable for intracellular introduction thereof, or introducing into said cells a DNA sequence encoding said one or more proteins, analogs, fragments or derivatives in the form of a suitable vector carrying said sequence, said vector being capable of effecting the insertion of said sequence into said cells in a way that said sequence is expressed in said cells.

36. A fragment according to claim 11 being a peptide.

37. A method for screening of a ligand capable of binding to a protein according to ~~any one of claims 11-13~~ Claim 11 comprising contacting an affinity chromatography matrix to which said protein is attached with a cell extract whereby the ligand is bound to said matrix, and eluting, isolating and analyzing said ligand.

38. A method for screening of a DNA sequence coding for a ligand capable of binding to a protein according to ~~any one of claims 11-13~~ Claim 11 comprising applying the yeast two-hybrid procedure in which a sequence encoding said protein is carried by one hybrid vector and sequences from a cDNA or genomic DNA library are carried by the second hybrid vector, transforming yeast host cells with said vectors, isolating the positively transformed cells, and extracting said second hybrid vector to obtain a sequence encoding said ligand.

39. A method for identifying and producing a ligand capable of modulating the cellular activity modulated/mediated by MORT-1 or MORT-1-binding proteins comprising :

a) screening for a ligand capable of binding to a polypeptide comprising at least a portion of MORT-1 or MORT-1-binding proteins selected from MACH proteins, Mch4 proteins and other MORT-1-binding proteins;

b) identifying and characterizing a ligand, other than MORT-1 or said MORT-1-binding proteins or portions of a receptor of the TNF/NGF receptor family, found by said screening step to be capable of said binding; and

c) producing said ligand in substantially isolated and purified form.

40. A method for identifying and producing a ligand capable of modulating the cellular activity modulated or mediated by a protein according to ~~any one of claims 11-13~~ claim 11 comprising :

a) screening for a ligand capable of binding to a polypeptide comprising at least a portion of the G1α sequence depicted in Fig. 1 or at least a portion of the G1β sequence depicted in Fig. 2;

b) identifying and characterizing a ligand, other than MORT-1 or MORT-1-binding proteins or portions of a receptor of the TNF/NGF receptor family, found by said screening step to be capable of said binding; and

c) producing said ligand in substantially isolated and purified form.

41. A method for identifying and producing a ligand capable of modulating the cellular activity modulated/mediated by G1 comprising :

a) screening for a ligand capable of binding to at least a portion of the G1α sequence depicted in Fig. 1 or the G1β sequence depicted in Fig. 2;

b) identifying and characterizing a ligand, other than MORT-1 or MORT-1-binding proteins or portions of a receptor of the TNF/NGF receptor family, found by said screening step to be capable of said binding; and

c) producing said ligand in substantially isolated and purified form.

42. A method for identifying and producing a molecule capable of directly or indirectly modulating the cellular activity modulated/mediated by G1, comprising :

a) screening for a molecule capable of modulating activities modulated/mediated by G1

b) identifying and characterizing said molecule; and

c) producing said molecule in substantially isolated and purified form.

43. A method for identifying and producing a molecule capable of directly or indirectly modulating the cellular activity modulated/mediated by a protein according to ~~any one of claims 11-13~~ claim 11, comprising :

a) screening for a molecule capable of modulating activities modulated/mediated by a protein according to ~~any one of claims 11-13~~ Claim 11;

b) identifying and characterizing said molecule; and

c) producing said molecule in substantially isolated and purified form.

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